

REMARKS

Claims 1-11, 13, 15, 16, and 21-32 are pending in the present Application. No claims have been canceled, Claims 1, 4, 22, and 24 have been amended, and no claims have been added, leaving Claims 1-11, 13, 15, 16, and 21-32 for consideration upon entry of the present Amendment.

Objections to Specification/Amendments to the Specification

The Specification has been amended to address the Examiner's objections. Specifically, the Examiner has objected to and required correction of the Specification on p.5, about ¶ [0020], which discloses the amount of thermosetting polymer from "about 1 to 50 wt%" which is not in accord with Claim 9. Accordingly, the Specification has been amended to replace this limitation with the limitation for the amount of thermosetting polymer of "about 50 to about 98 wt%". Support for this amendment can be found in Claim 9 as originally filed, and in the Examples of the Specification on p. 17, Table 1. No new matter has been introduced by this amendment.

The Examiner has further objected to and required correction of the Specification on about p. 16, about ¶ [0055], to reflect the limitations of Claim 21. Accordingly, the Specification has been amended to include the phrase "...greater than or equal to about 0.75 kilovolt (kV), specifically..." Support for this amendment can be found in Claim 21 as originally filed.

In addition, the Examiner has objected to the inclusion of the phrase "for a time period over 100 minutes" in Claim 22, which is not supported in the Specification. Accordingly, the Specification has been amended on p. 20, about ¶ [0063], to amend the phrase "a corona resistance for a time period of greater than 100 hours minutes". Support for this amendment can be found in Claim 22 as originally filed, and in Figure 1 as filed.

No new matter has been introduced with these amendments.

Amendments to the Claims

Claims 1 and 24 have each been amended to replace the limitation to an amount of nanosized filler of “0.01 to 30 weight percent” with a limitation to an amount of nanosized filler of “about 2 to about 15 wt%”. Support for this amendment can be found at least in the Specification as filed on about page 10, ¶ [0034].

Claim 4 has been amended to remove an inadvertent typographical error resulting from twice including the term “polysulfones”.

Claim 22 has been amended to replace the term “over” with “greater than”, support for which can be found in the Specification on p. 20, ¶ [0063].

No new matter has been introduced by these amendments.

Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

Claim Rejections Under 35 U.S.C. § 112, First Paragraph

Claims 1-11, 13, 15, 16, and 21-27 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the Specification in such a way as to reasonably convey to one skilled in relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Specifically, the Examiner contends that the amount of ferritic nanosized filler of 0.01 to 30 wt% as claimed in independent Claims 1 and 24 is not reasonably enabled by the Specification. Claims 1 and 24 have therefore been amended to change the limitation to “about 2 to about 15 wt%” as described hereinabove. Accordingly, Claims 1 and 24 and their dependents should now be acceptable upon entry of the present amendment. Reconsideration and withdrawal of the rejection is therefore respectfully requested.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-11, 13, 15, 16, and 21-32 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over U.S. Publication No. 2002/0132898 (“Takaya ‘898”) or U.S. Patent No. 6,908,960 (“Takaya ‘960”). Applicants respectfully traverse these rejections.

As the application published as Takaya ‘898 has issued as the US Patent Takaya ‘960, and as the disclosures of each are substantially identical, Applicants believe for the purpose of the present Office Action that it is unnecessary to address both references explicitly. Therefore, Takaya ‘960 will be addressed herein as the primary allegedly anticipatory reference, and it will be understood that relevant corresponding portions of Takaya ‘898 will also be addressed by the above amendments and following remarks.

Takaya ‘960 discloses a composition comprising a polyvinyl benzyl ether and a ceramic powder or magnetic powder. Col. 5, lines 65-66 and col. 8, lines 19-21.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness, i.e., that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

Takaya ‘960 fails to disclose the amount of ferritic nanosized filler claimed in amended Claims 1 and 24. Takaya discloses that the amount of magnetic powder used is 50 to 90 wt% based on the weights of magnetic powder and polyvinylbenzyl ether. Col. 8, lines 31-34. Takaya ‘960 fails to disclose the amount of ferritic nanosized filler of about 2 to about 15 wt% as claimed in amended claims 1 and 24, and amounts of nanosized filler of 0.01 to 30 wt% as claimed in Claims 28 and 30, and clearly discloses use of

amounts of magnetic powder and ceramic powder that are significantly higher than the amounts claimed in the instant claims.

Takaya '960 discloses that the amount of magnetic powder dispersed in the polyvinylbenzyl ether may be present in an amount of 25 to 65 volume percent (vol%). Col. 11, lines 11-12. The instant claims do not claim a specific vol% of magnetic particles as disclosed in Takaya '960. One skilled in the art will appreciate that magnetic ferrite powders, such as those available commercially, and prepared as they are from iron oxides, will generally have a significantly greater density than carbon-based polymer systems, particularly than non-halogenated carbon based polymers such as polyvinylbenzyl ethers, and that even the lowest value of 25 vol% for the magnetic powders of Takaya '960, when converted to a corresponding weight percentage, would be significantly higher than the upper limit of ferritic nanosized filler of 15 wt% as claimed in the instant claims. For example, commercial ferrites can have densities ranging from approximately 3.7 to 5.3 grams per cubic centimeter (g/cc), values that are significantly higher in density than that of thermosetting polymers, such as polyvinylbenzyl ether, where such polymers typically have a density of approximately 1 g/cc. From these values, it can be readily estimated that the wt% of magnetic particles using these density values and the disclosed vol% ranges corresponds to a range of approximately 51 to 90 wt% of magnetic particles based on the total weight of magnetic particles and polyvinyl benzyl ether, which is approximately consistent with the weight percentage of magnetic particles disclosed in Takaya of 50 to 90 wt%, and is also well above the weight percentages claimed in the instant claims even when taking into account a reasonable margin of error. Therefore, Takaya '960 clearly fails to disclose an amount of nanosized filler of about 2 to about 15 wt% as claimed in the amended instant claims 1 and 24, and therefore fails to disclose or teach all elements of these claims and their dependents. Accordingly, Takaya '960 and Takaya '898 do not make unpatentable independent Claims 1 and 24, or their dependents.

In addition, Takaya '960 teaches that a concentration of magnetic particles in the range 50 to 90 wt% "ensures the benefits of the invention" and that "too small a magnetic

powder content may fail to provide the desired magnetic permeability, detracting from the magnetic characteristics”. Col. 25, lines 15-21. Thus, Takaya ‘960 definitively teaches toward a concentration of magnetic particles significantly greater than the amount claimed in instant Claims 1 and 24 of about 2 to about 15 wt%, and thereby teaches away from this claimed amount. The Examiner has stated on p. 5, of the Office Action dated November 1, 2006 that the amount of magnetic particles disclosed in Takaya ‘960 represents a result-effective variable, and that therefore the amounts claimed in the instant claims are obvious. Applicants respectfully disagree, and assert that amounts of magnetic (i.e., ferritic) powders outside of the specific range in the disclosure of Takaya ‘960 cited above, which thus strongly teaches away from amounts of magnetic particles outside this range, would therefore fail provide a useful composition according to Takaya ‘960, and do not thereby teach that amounts outside of the ranges disclosed in Takaya ‘960 would be result-effective as stated by the Examiner in any context other than within the ranges so provided. *In re Laskowski*, 871 F.2d 115, 117, 10 U.S.P.Q.2d 1397, 1398 (Fed. Cir. 1989) (“Although the Commissioner suggests that [the structure in the primary art reference] could readily be modified to form the [claimed] structure, ‘[t]he mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification’”) (citation omitted). The courts have held that “[i]f the proposed modification would render the prior art invention being modified unsatisfactorily for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon* 733 F. 2d 900, 221 USPQ 1125 (Fed. Cir. 1984). The courts have also held that ‘[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious.’” *In re Ratti* 270 F. 2d 810, 123 USPQ 349 (CCPA 1959). Thus, to broadly state as the Examiner has done that use of any amount outside the ranges disclosed in Takaya ‘960 is taught in Takaya ‘960 as useful, whether or not designated as a result effective variable within the scope of the disclosure of Takaya ‘960, would destroy the intent of the reference.

Even if the amounts of ferritic nanosized filler claimed in Claims 1 and 24, or of nanosized filler claimed in Claims 28 and 30 of the instant Claims were present in result-effect amounts *outside* of the scope and teachings of Takaya '960, a point which Applicants do not concede, the Examiner has nevertheless not proven a case of prima facie obviousness. It is well-established that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art". *In re Boesch*, 205 U.S.P.Q. 215, 219 (C.C.P.A. 1980). Such discovery establishes a prima facie case of obviousness. *Id.* However, it is equally well-established that a prima facie case of obviousness may be rebutted "where the results of optimizing a variable, which was known to be result effective, [are] surprisingly good." *Id.*, citing *In re Antonie*, 195 U.S.P.Q. 6, 8-9 (C.C.P.A. 1977) and cases cited therein. Optimizing the amount of nanosized filler to about 2 to about 15wt% in the instance of ferritic nanosized filler in instant Claims 1 and 24, and 0.01 to 30 wt% in the instance of nanosized filler in instant Claims 28 and 30, these total filler amounts have resulted in a surprisingly good balance of properties of the material of the present invention. So-called "secondary considerations" thus provide evidence of the nature and importance of this result.

There is thus no suggestion or motivation that would induce one skilled in the art to modify Takaya '960 to provide the insulating layer having the composition as claimed in Claims 1 and 24, nor would there be a reasonable expectation for success provided by the teachings of Takaya '960 for using an amount of ferritic nanoparticle less than that disclosed therein. Thus, Takaya '960 fails to make unpatentable independent Claims 1 and 24, and their dependents.

Applicants respectfully disagree with the Examiners statement on p. 5, about line 1, of the Office Action dated November 1, 2006, that Takaya '960 "provides a suggestion to provide the particles in such an amount given the ranges for other additive taught therein". The Applicants respectfully submit that the Examiner, in arriving at this specific construction, has destroyed the intent of the references. In this regard, the courts have held that "[i]f the proposed modification would render the prior art invention being modified unsatisfactorily for its intended purpose, then there is no suggestion or

motivation to make the proposed modification. *In re Gordon* 733 F. 2d 900, 221 USPQ 1125 (Fed. Cir. 1984). The courts have also held that “[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.” *In re Ratti* 270 F. 2d 810, 123 USPQ 349 (CCPA 1959). Takaya ‘960 discloses a composite dielectric material comprising a resin and a ceramic powder dispersed therein, wherein the resin results from a polyvinylbenzyl ether compound. Col. 6, lines 63-65. The content of ceramic powder is from 10 vol% to less than 70 vol% *based on the polyvinylbenzyl ether compound and ceramic compound combined*. Col. 5, line 65 to Col. 6, line 1; emphasis added. The polyvinylbenzyl ether compound is used alone, in combination of two or more compounds, in combination with 2 to 50 wt% of a copolymerizable monomer, or in combination with 5 to 90 wt% of a second resin, where the amount of resin or monomer is based on the amount of the weight of polyvinylbenzyl ether compound. Col. 20, lines 17-38. The thermosetting resin composition comprising the polyvinylbenzyl ether compound alone or in combination with the other monomers or thermosetting resin can be cured. Col. 20, lines 42-46. There is thus a combined teaching that the total quantity of polyvinylbenzyl ether compound, also referred to in Takaya ‘960 generally as “thermosetting resin composition”, even when alloyed with other additives, does not exceed the amounts defined by the limitation therein of 10 to less than 70 vol% of ceramic powder, or 50 to 90 wt% (or 25 to 65 vol%) of magnetic powder, and that Takaya ‘960 thus teaches away from any proportions of the components that would place the net composition outside of these ranges. Taking the teachings of Takaya ‘960 as a whole, the reference must therefore teach specifically the amounts of filler (ceramic powder or magnetic powder) in the proportions disclosed therein, and that to extrapolate a teaching that Takaya ‘960 would lead one skilled in the art to use combinations of components that would lead to proportions of filler outside the disclosed ranges of Takaya ‘960 would negate the teaching and intent of the limitations on the amount of filler disclosed in Takaya ‘960. Thus, there is no teaching or suggestion that would lead one skilled in the art to modify the disclosure of Takaya ‘960 to provide the limitations of ferritic nanosized filler of about 2 to about 15 wt% as claimed in Claims 1 and 24 and their dependents, or

nanosized filler in an amount of 0.01 to 30 wt% as claimed in Claims 28 and 30 and their dependents.

Further, regarding the rejections of Claims 28 and 30, Takaya '960 discloses a ceramic filler in an amount of 10 vol% to less than 70 vol%, provided that the total of the resin (i.e., the polyvinylbenzyl ether compound) and ceramic powder is 100 vol%. Col. 5, line 63 to Col. 6, line 1, and Col. 21. Takaya '960 further discloses various exemplary ceramic powders. Col. 21, lines 5-40. The Examiner has stated in the Office Action dated November 1, 2006, on p. 5 that Takaya '960 "provides a suggestion to provide the particles in such an amount given the ranges for the other additive materials wherein one having ordinary skill in the art would have been motivated to use any amount of the materials disclosed...to determine the optimum amount of ferrite or ceramic particles based on the desired end use." Applicants respectfully disagree that Takaya '960 teaches filler amount as a result-effective variable as broadly as the Examiner implies, or that amounts outside of the disclosed ranges of Takaya '960 are taught as a result-effective variable at all, and note that Takaya '960 specifically discloses that 70 vol% (or more) of a ceramic powder obstructs flow, and at less than 10 vol% the ceramic powder "fails to exert its effect". Col. 22, lines 1-8. Takaya thus clearly teaches a limited range of utility based on the volume percent range of ceramic powder, and thus if there is an amount of ceramic powder corresponding to a result-effective variable as the Examiner has stated, it is taught to be exclusively within the volume percent range disclosed in Takaya '960 based on the above teachings, and not outside of this range.

Takaya '960 also fails to disclose a nanosized filler in an amount of 0.01 to 30 *weight* percent as claimed in instant claims, and only discloses the use of ceramic powder as a *volume* percent of the total volume of the composition. Takaya '960 is silent as to the weight percent of ceramic powder present in the composition. There is thus no teaching or disclosure present in Takaya '960 that would lead one skilled in the art to modify Takaya '960 to arrive at the claimed compositional amount of 0.01 to 30 weight percent of a nanosized filler as claimed in instant Claims 28 and 30. Takaya '960 thus

fails to provide a suggestion or incentive that the reference can be modified to provide the missing limitation, and therefore fails to render the claim unpatentable.

There is further no reasonable expectation that the ceramic powder as disclosed in Takaya '960, present in the disclosed volume percentage amounts, would be reasonably expected to be concurrently present in an amount corresponding to or overlapping with the weight percentage as claimed in Claims 28 and 30. As is generally known in the art, ceramics such as those exemplified in Takaya '960 possess high densities relative to organic polymers such as the polyvinylbenzyl ether compound disclosed therein, such that the relative densities would make it at best unlikely, and in any conceivable case based on the disclosure of Takaya '960 certainly impossible, for one of ordinary skill in the art to achieve a composition having a percentage of filler of 30 wt% or less, even with a ceramic filler included at the lowest amount disclosed in Takaya '960 of 10 vol% based on 100 vol% of resin and ceramic powder. Further, Takaya '960 teaches away from the use of amounts of ceramic powder of less than 10 vol% which could meet the claimed weight percentage ranges of instant Claims 28 and 30, and so Takaya '960 provides no reasonable expectation that so modifying the disclosure would provide the composition and properties as claimed in the instant claims. The requirement for a determination of obviousness is that "both the suggestion and the expectation of success must be founded in the prior art, not in applicant's disclosure" (emphasis added). *In re Dow Chem.*, 837 F.2d 469, 473, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988). An Examiner, then, cannot base a determination of obviousness on what the skilled person in the art might try or find obvious to try. Rather, the proper test requires determining what the prior art would have led the skilled person to do. Takaya '960 provides neither the suggestion to modify as stated by the Examiner nor the expectation that such modification would be successful. Therefore, Takaya '960 does not render the invention of the instant claims 28 and 30 or their dependents unpatentable.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants.

Accordingly, reconsideration and withdrawal of the objection(s) and rejection(s) and allowance of the case are respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 07-0868.

Respectfully submitted,

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